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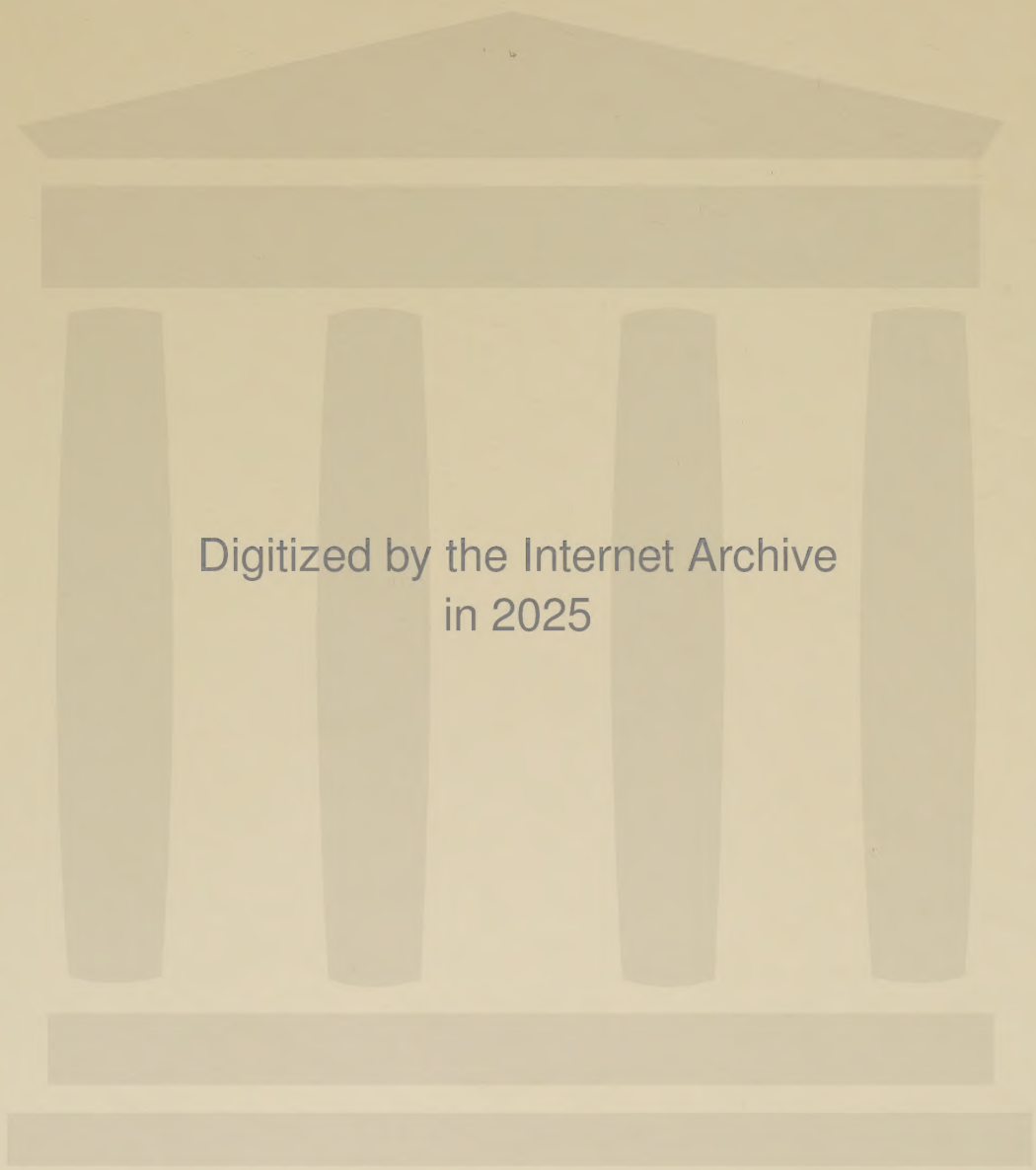
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JANUARY 1976
No. 1

FISHING INFORMATION

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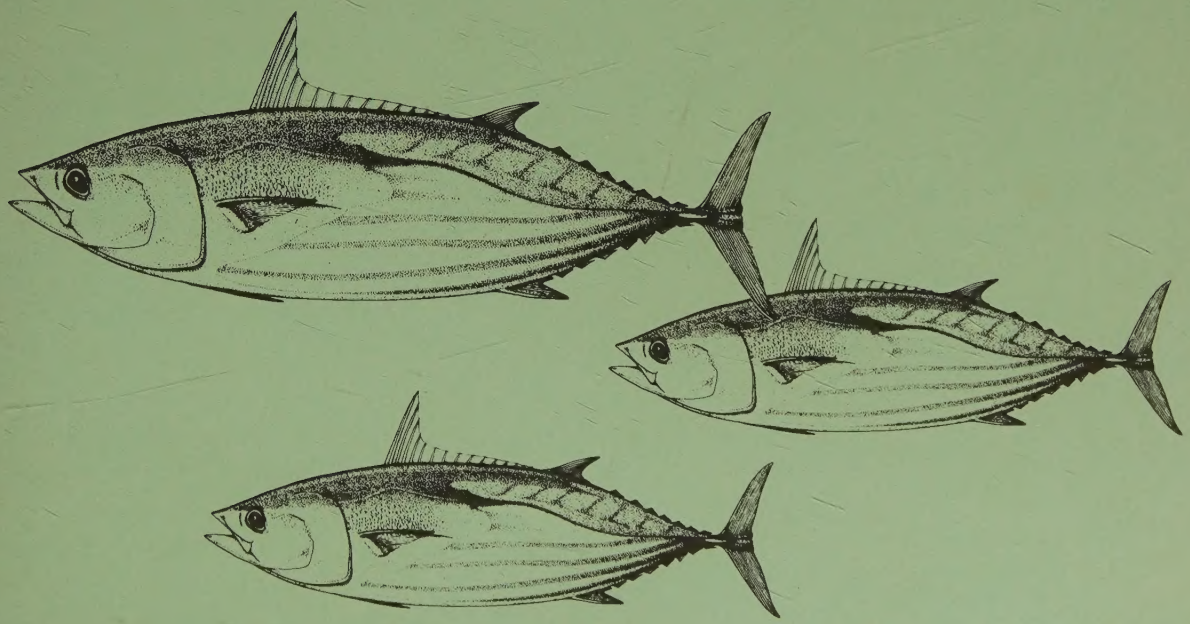

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U.S. DEPARTMENT OF COMMERCE
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FISHING INFORMATION

JANUARY 1976 , No. 1

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N. Abramson, Director, Tiburon Laboratory

PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. This is a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this publication approved by the Office of Management and Budget, August 20, 1973; this approval expires June 1976.

Submitted for publication - February 19, 1976

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RONMENTAL CHARTS ANALYZED BY:

iller (Figures 8 and 9)
enner (Figures 1, 2, 3, 4, 5, 6, 7, 10, 11, 12 and 15-day Supplement)

TECHNICAL EDITOR:
R. Allen
CARTOGRAPHY:
R. Allen, H. Orr

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National Ocean Survey, Pacific Marine Center, Seattle, Washington
Fisheries Research Board of Canada, Pacific Environment Institute, West Vancouver, British Columbia by L.F. Giovando from observations by
L. Sabourin at Langara Island Light; G. Anderson at Cape St. James Light;
L. Collins at Kains Island Lightstation; I.G. McNeil at Amphitrite Point Light
Scripps Institution of Oceanography, La Jolla, California
Fishing Vessels, *Antonina C.*, *Aquarius*, *Bettie M.*, *Bold Contender*, *Cabrillo*, *Carol Virginia*, *Cheryl Marie*, *City of San Diego*, *Conquest*, *Frances Ann*, *Gina Karen*, *Jo Linda*, *Kathleen*, *Lucky Strike*, *Marco Polo*, *Maria C.J.*, *Marietta*, *Marla Marie*, *Mary Barbara*, *Missouri*, *Pan Pacific*, *Queen Mary*, *Raefello*, *Rosa Olivia*, *San Juan*, *Santa Rosa*, *Saratoga*, *Sea Quest*, *Sea Treasure*, *Venturous*, and *Willa G.*

Expendable bathythermograph and salinity observations are made by the mates and engineers of th *Hawaiian Queen* and *Californian* of Matson Navigation Co. The data are processed under supervisi of D.R. McLain at the NMFS Pacific Environmental Group, Monterey, using computer facilities of Fleet Numerical Weather Center. The project is partially supported by the National Science Fou tion and the Office of Naval Research under Government NAonr-9-74.

Sea Surface Temperature and Environmental Conditions

N. CLARK AND F. MILLER

Eastern North Pacific

Seasonal cooling of the surface layer of the eastern North Pacific continued at a below-normal rate during January 1976, and sea surface temperatures dropped 1 to 4°F (0.6 to 2.2°C) from December 1975 values. The largest decreases in temperature occurred in a region bounded by 25°N and 40°N and 150°W and 180° where temperatures dropped 2 to 5°F (1.1 to 2.8°C) from December values.

The sea surface temperature anomaly pattern for January is similar to the one that persisted throughout 1975. The large area of 1 to 3°F (0.6 to 1.7°C) above-normal temperatures moved eastward during the month and stretches from 20°N to 45°N and 130°W to 180°. The greatest change in the anomaly pattern occurred between 40°N and 50°N and 150°W and 175°W where temperatures that were 1 to 2°F (0.6 to 1.1°) above normal decreased to 1 to 2°F (0.6 to 1.1°C) below-normal values. Below-normal temperatures continued in the Gulf of Alaska, off the west coast of North America, and over a large area extending southwestward from Baja California to the Hawaiian Islands.

The sea level pressure pattern over the central and eastern North Pacific for January is similar to that of December with a deep surface low pressure area with negative departures up to 11 millibars south of the Bering Sea and the Aleutian Islands and a high pressure ridge with positive departures up to 7 millibars off the west coast of North America. The resultant pressure gradients between the two regions caused strong south-to-southwest winds north of 30°N and between 135°W and 165°W which contributed to the eastward shift of the above-normal temperature anomaly area. The change from above-normal to below-normal temperatures south of the Aleutian Islands was probably caused by increased mixing of the ocean surface layer and latent and sensible heat transfer between ocean and atmosphere due to the passage of storms over the area.

Western North Pacific

Seasonal cooling of the surface layer in the western North Pacific occurred at a greater-than-normal rate, and many areas of above-normal temperatures in December 1975 decreased to below-normal values in January 1976. The largest change occurred in a region bounded by 25°N and 40°N and 160°E and 180° where temperatures that were 1 to 3°F (0.6 to 1.7°C) above normal decreased to slightly above or below-normal values in January. Other changes occurred east of Honshu and Hokkaido where 1 to 2°F (0.6 to 1.1°C) above-normal temperatures decreased to 1 to 2°F (0.6 to 1.1°C) below-normal values and southeast of the Kamchatka Peninsula where 1 to 3° (0.6 to 1.7°C) above normal temperatures decreased to slightly above or below normal values.

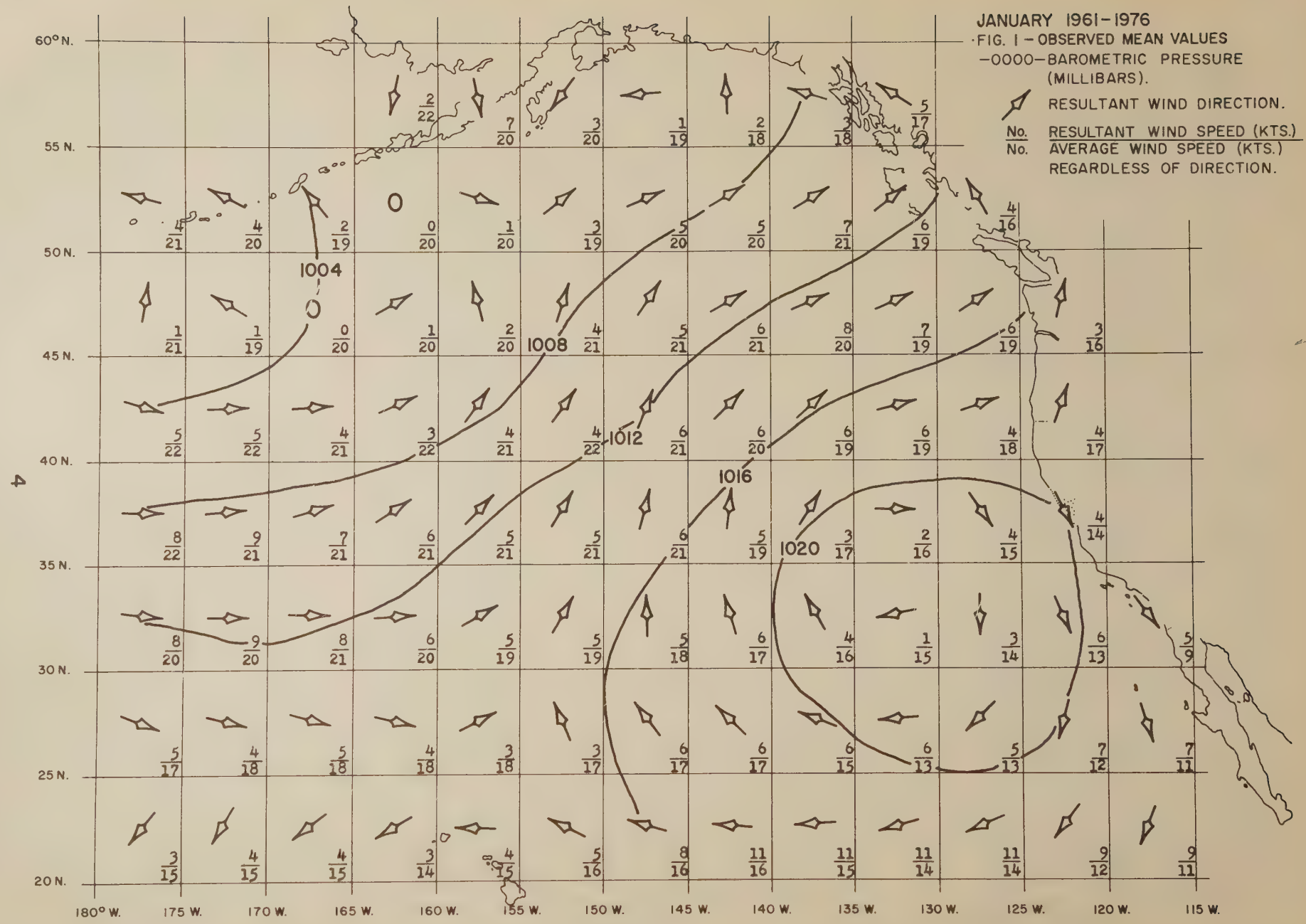
Eastern Tropical Pacific

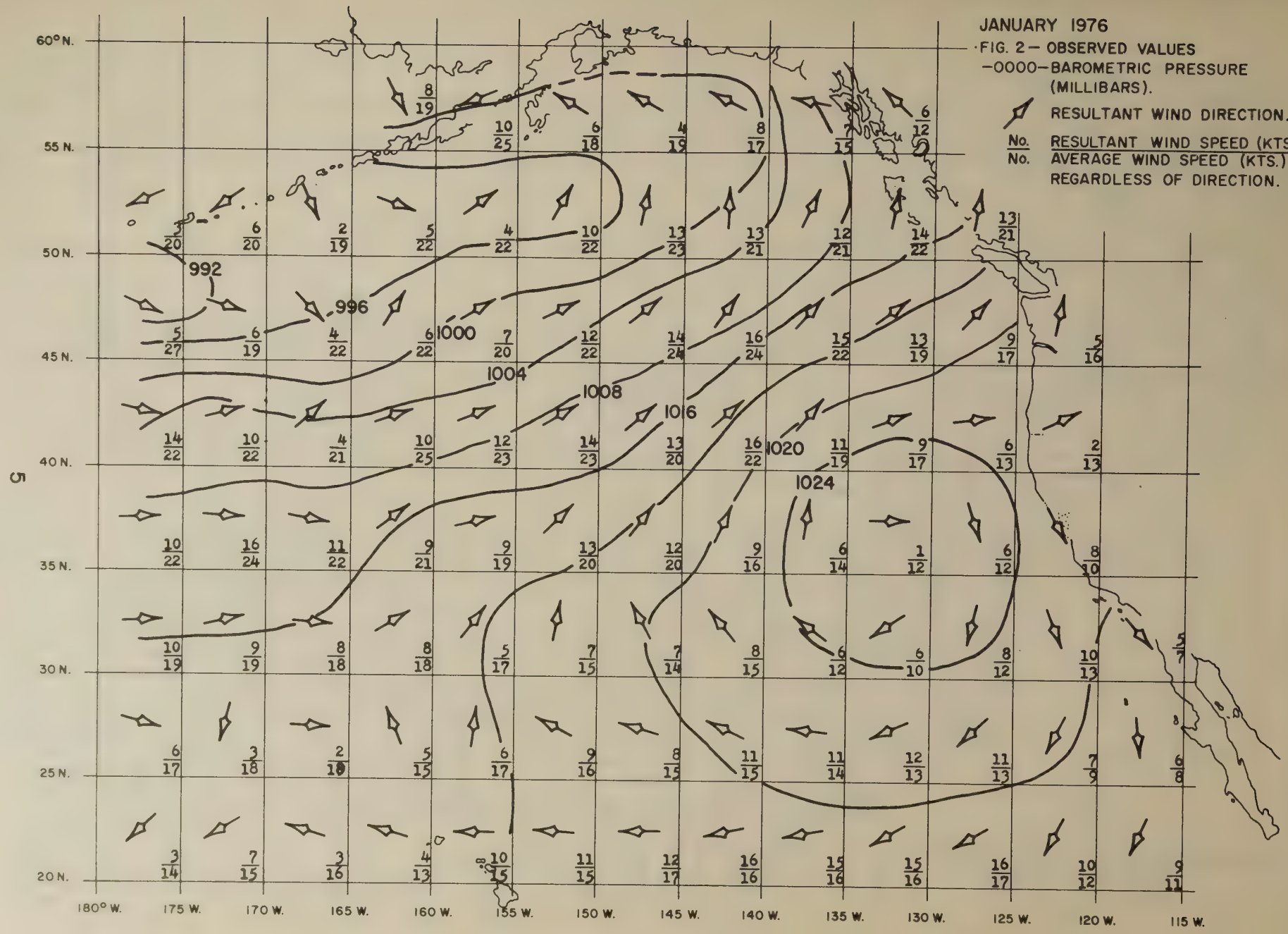
Sea surface temperatures (SST) over most of the tropical fishing grounds of the northern hemisphere normally show seasonal cooling rates less than 2°F (1.1°C) from December to January. However, along the west coasts of Baja California and Mexico to 18°N seasonal cooling rates of 2 to 4°F (1.1 to 2.2°C) can be expected. In the southern hemisphere the equatorial ocean front normally weakens between 140°W and Ecuador as upwelling along the equator is diminished. Seasonal warming in the Peru Current and westward along the equator to 120°W normally continues at rates of 2 to 4°F (1.1 to 2.2°C) per month.

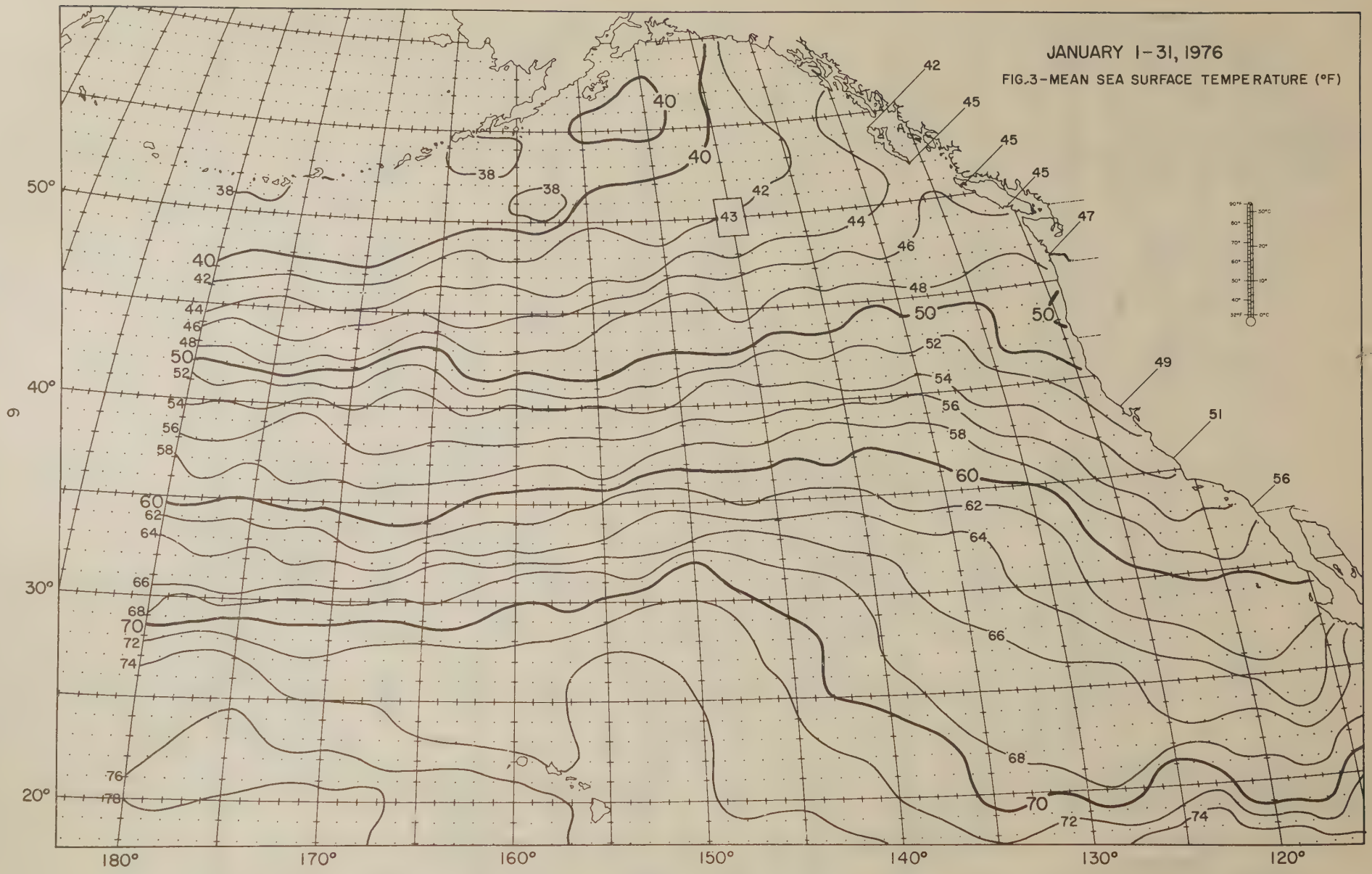
During January 1976 temperatures over the tuna fishing grounds south of 20°N and east of 110°W were below normal in most places, and the fishing fleet was widely scattered. Cold temperatures extended southward to 10°N from the Gulf of Tehauntepec and westward from Costa Rica (Figure 8). The extensive areas of negative SST anomalies greater than 2°F (1.1°C) north of the equator and east of 110°W (Figure 9) were associated with strong and persistent northerly winds. In the Local

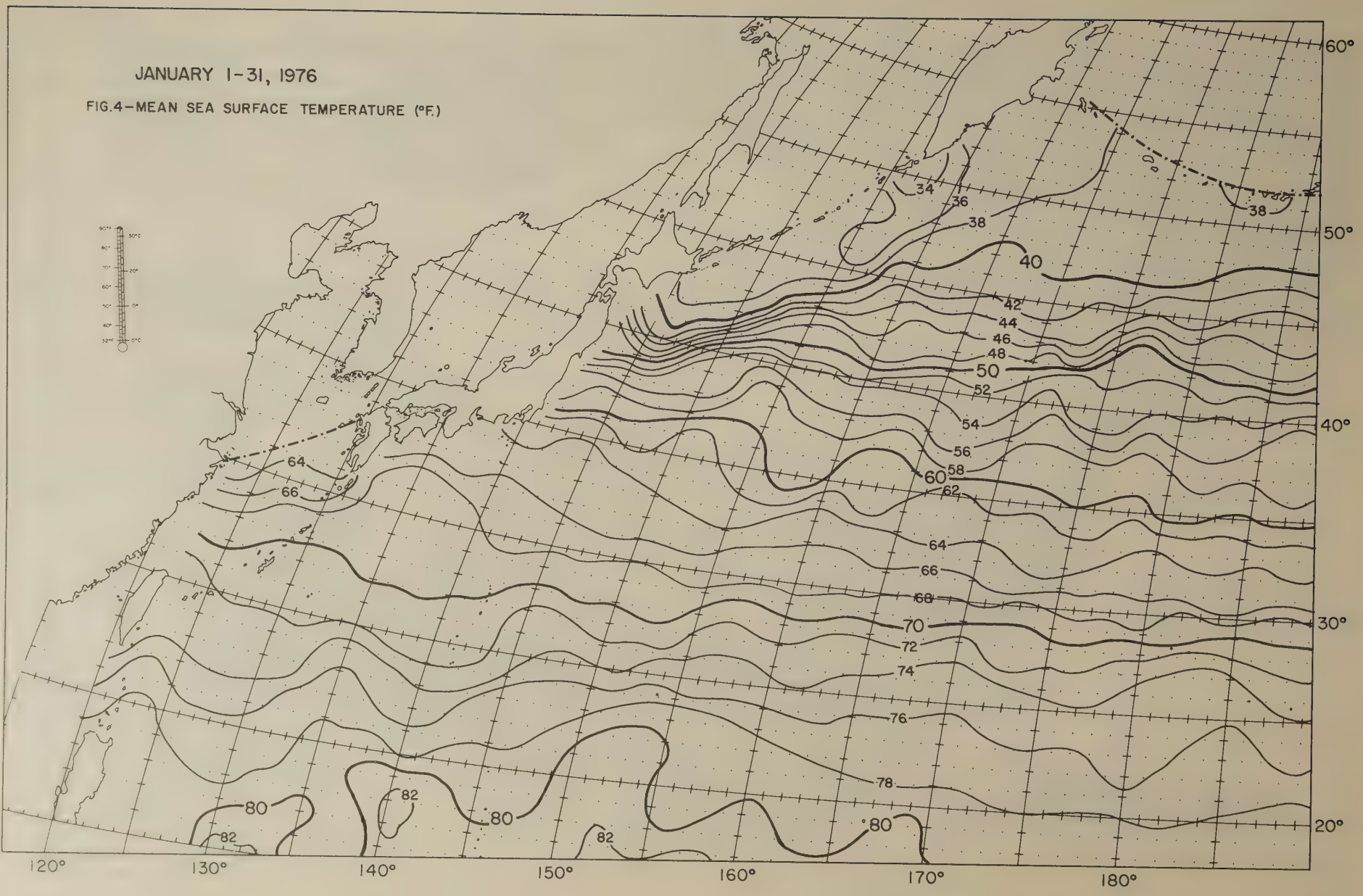
Banks fishing grounds off Baja California SST's were near normal or slightly above normal from 26°N to Cape San Lucas (Figure 9). Fishermen made good catches in this area where temperatures were greater than 68°F (Figure 8).

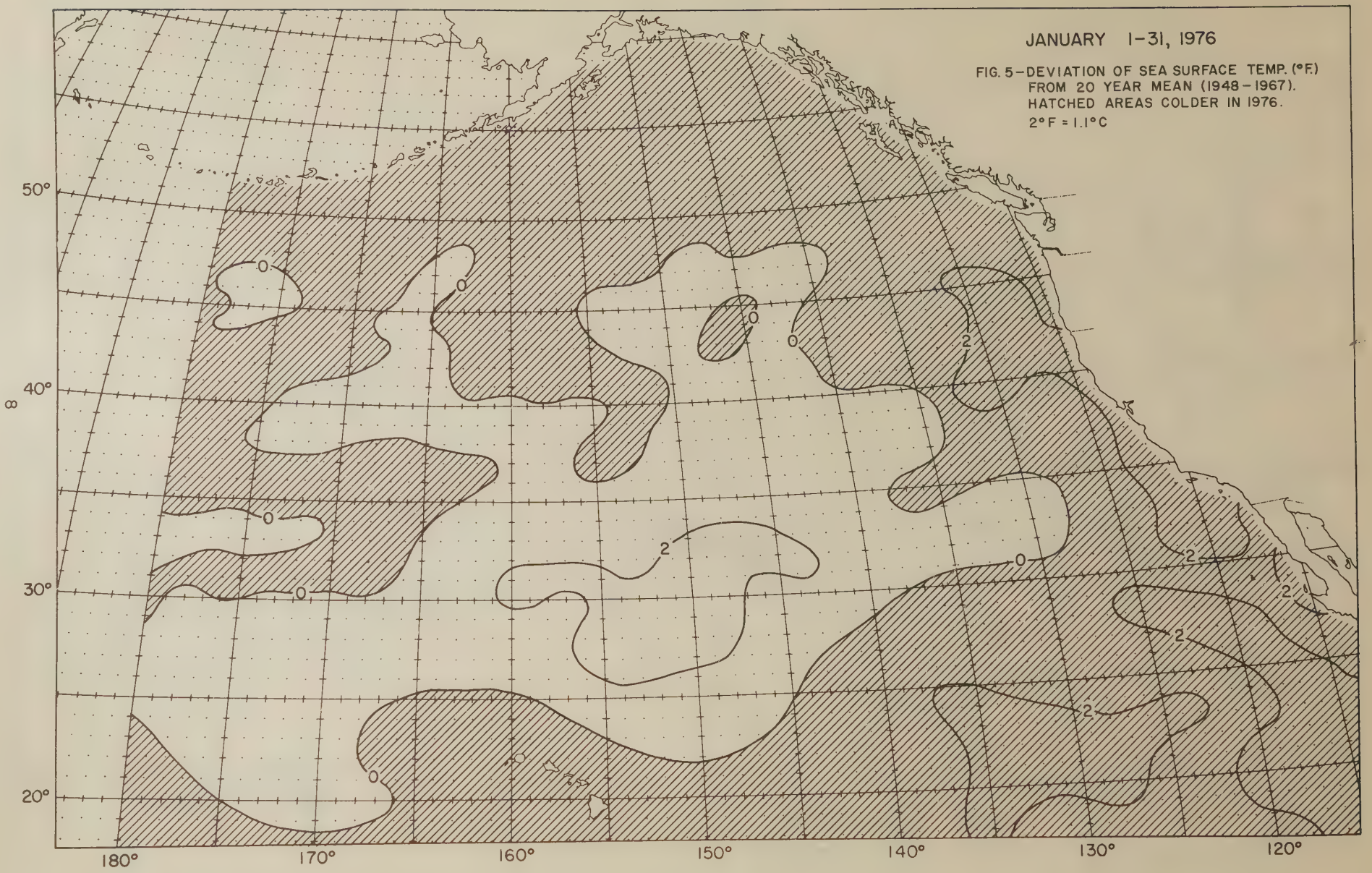
Over most of the eastern tropical Pacific west of 120°W the SST anomaly patterns (Figure 9) were similar to those in December 1975. The equatorial front between the Galápagos Islands and Ecuador began to weaken during the last part of January, especially near the coast of Ecuador where slight positive SST anomalies (Figure 9) extended southward to the Gulf of Guayaquil. This condition existed in December 1975 also. Tuna fishing in the offshore waters of Ecuador has been exceptionally good for the past 2 months where SST's were near or slightly above normal. Along the coast of Peru seasonal warming of 2 to 4°F (1.1 to 2.2°C) took place from December to January. The SST anomaly patterns (Figure 9) east of 90°W in the southern hemisphere were similar to those in December 1975 and also to those 1 year ago in January 1975. During January 1976 the subtropical high pressure ridge persisted off South America, and the southeast trades blew with normal steadiness. Below-normal SST's continued along the coast of Peru and northern Chile (SST's near shore are not shown in Figure 8 because of insufficient data).

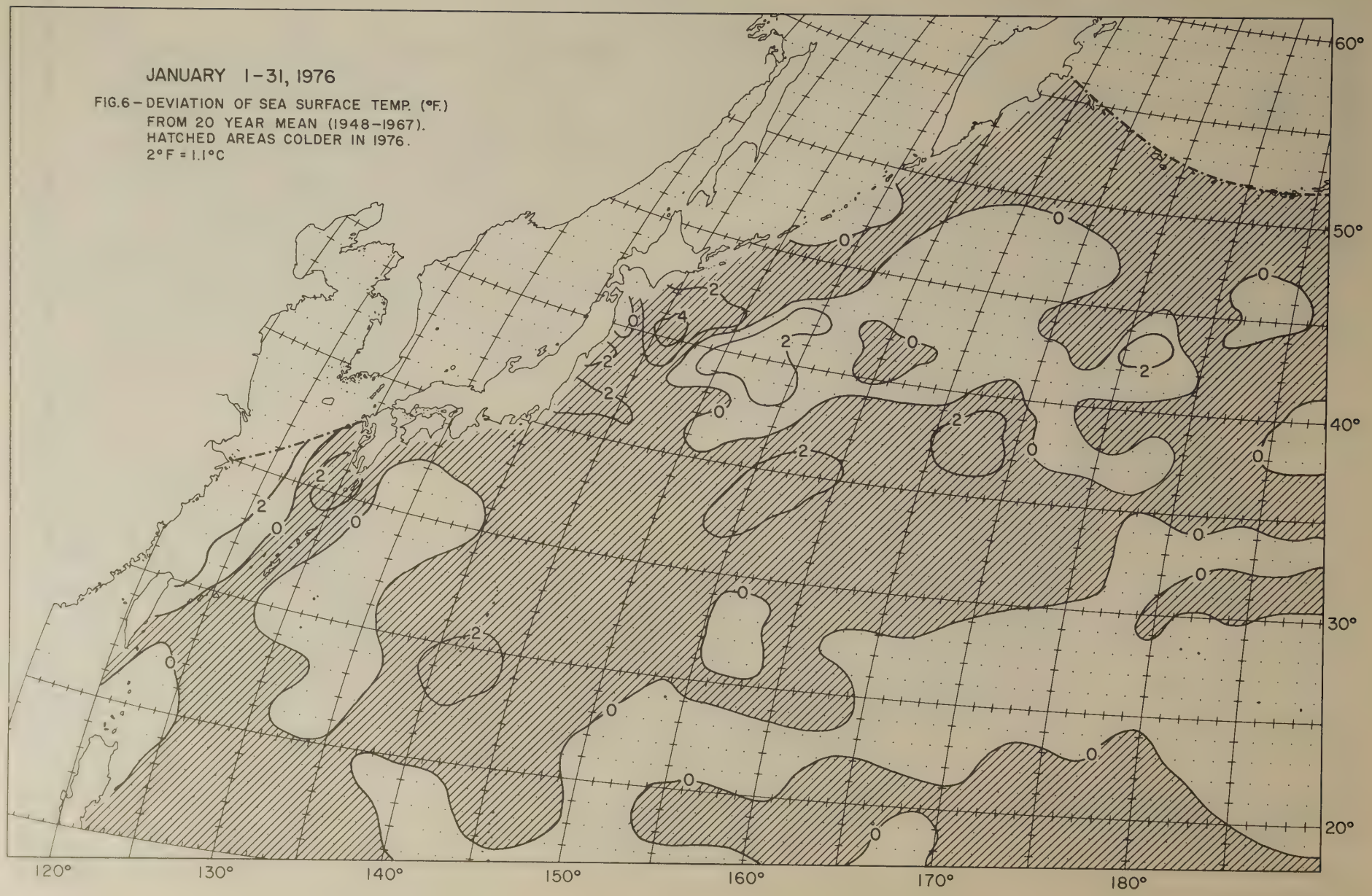

JANUARY 1961-1976
FIG. 1 - OBSERVED MEAN VALUES
-0000- BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

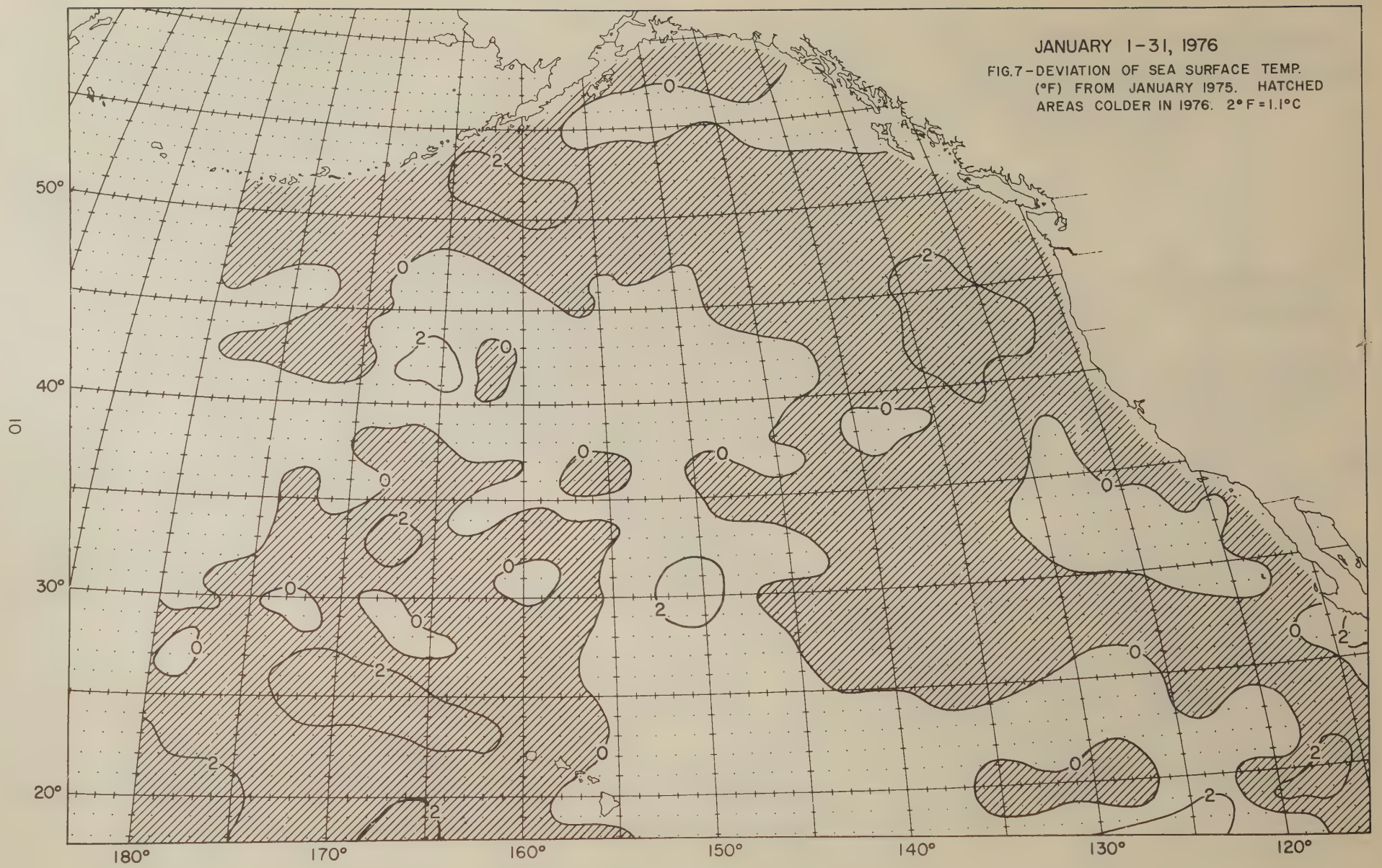

JANUARY 1976
FIG. 2 — OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. / No. RESULTANT WIND SPEED (KTS.) / AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
992
996
1000
1004
1008
1016
1020
1024
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

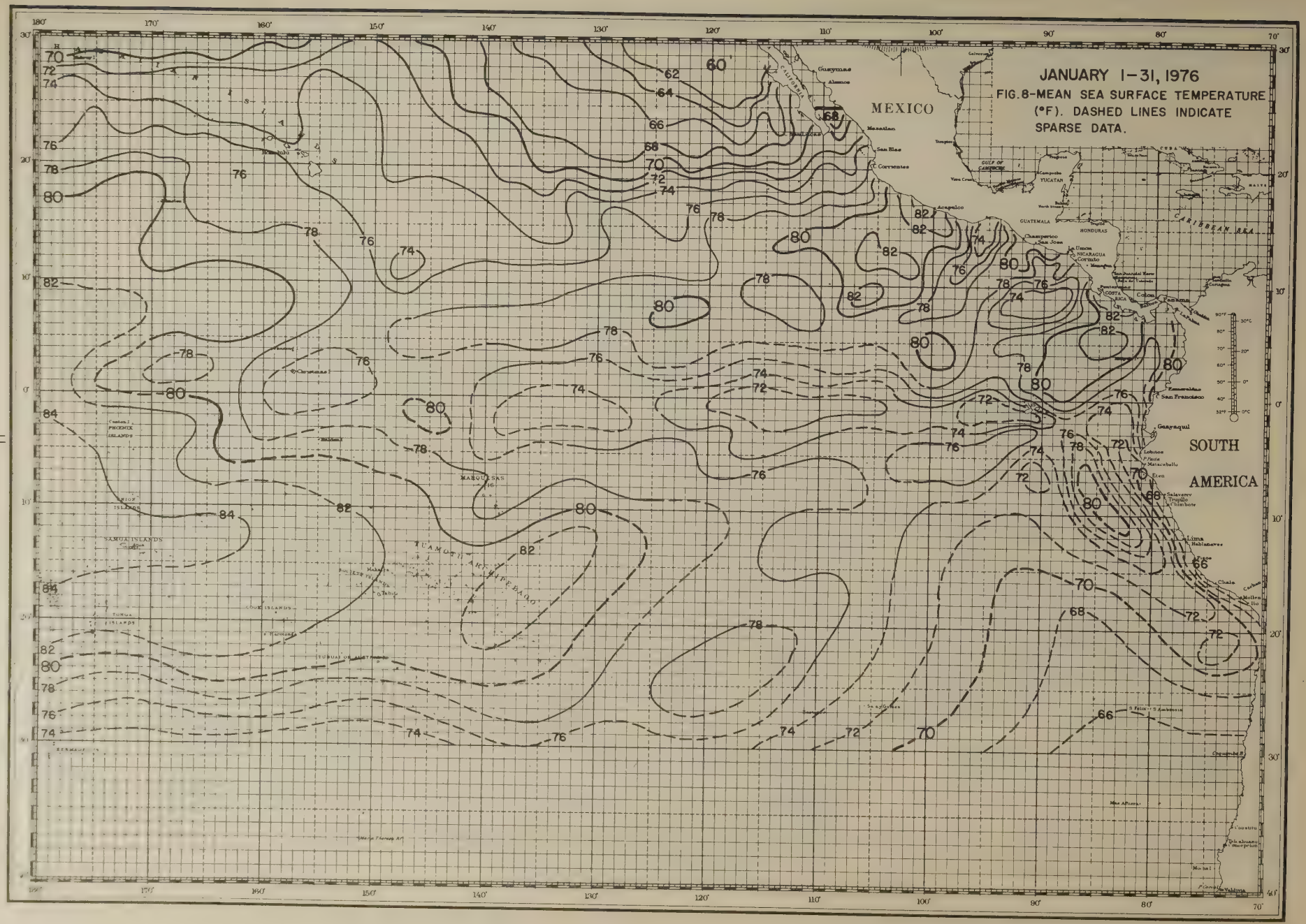

JANUARY 1-31, 1976
FIG.3-MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
38
40
42
43
44
45
46
47
48
49
50
51
52
54
56
58
60
62
64
66
68
70
72
74
76
78


JANUARY 1-31, 1976
FIG.4-MEAN SEA SURFACE TEMPERATURE (°F.)
34
36
38
38
40
42
44
46
48
50
52
54
56
58
60
62
64
66
64
66
68
70
72
74
76
78
80
82
80
82
80
82
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


JANUARY 1-31, 1976
FIG. 5-DEVIATION OF SEA SURFACE TEMP. (°F.) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1976.
2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2


JANUARY 1-31, 1976
FIG.6 - DEVIATION OF SEA SURFACE TEMP. (°F.)
FROM 20 YEAR MEAN (1948-1967).
HATCHED AREAS COLDER IN 1976.
2°F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


JANUARY 1-31, 1976
FIG.7-DEVIATION OF SEA SURFACE TEMP. (°F) FROM JANUARY 1975. HATCHED AREAS COLDER IN 1976. 2° F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2


JANUARY 1–31, 1976
FIG. 8–MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF MEXICO
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
YUCATAN
Acapulco
Manzanillo
Guaymas
Mazatlan
San Blas
Corrientes
Champerico
San Jose
Corinto
Colon
Cristobal
Guayaquil
San Francisco
Esmeraldas
Salaverry
Trujillo
Chimbote
Lima
Callao
Chala
Mollendo
Arica
Iquique
Antofagasta
Coquimbo
Valparaiso
Talcahuano
Corral
Juan Fernandez Is.
Easter Is.
Galapagos Is.
Cocos Is.
Clipperton I.
Revillagigedo Is.
Socorro I.
San Benedicto I.
Roca Partida
Clarion I.
Marquesas Is.
Tuamotu Archipelago
Society Is.
Tahiti
Cook Islands
Samoa Islands
Phoenix Islands
Tokelau Is.
Tuvalu or Ellice Is.
Tungua Islands
Line Islands
Christmas
Malden I.
Penrhyn I.
Manihiki
Rakahanga
Suwarrow I.
Nassau I.
Palmyra I.
Jarvis I.
Howland I.
Baker I.
Canton I.
Enderbury I.
Hull I.
Gardner I.
Kingman Reef
Johnston I.
Sand I.
Midway Is.
Wake I.
Marcus I.
Minami-Tori-Shima
Iwo Jima
Volcano Is.
Bonin Is.
Marianas Is.
Guam
Caroline Is.
Marshall Is.
Gilbert Is.
Ocean I.
Nauru I.
Kusaie
Ponape
Truk
Yap
Palau Is.
Mariana Trench
Marianas Trench
Mariana Trough
Tonga Trench
Kermadec Trench
Kermadec Is.
Macquarie I.
Auckland Is.
Campbell I.
Antipodes Is.
Bounty Is.
Chatham Is.
Norfolk I.
Lord Howe I.
Tasman Sea
Coral Sea
Solomon Is.
Santa Cruz Is.
New Hebrides
New Caledonia
Loyalty Is.
Fiji Is.
Rotuma I.
Wallis I.
Futuna I.
Niue I.
Tonga Is.
Tubuai Is.
Rapa I.
Pitcairn I.
Henderson I.
Ducie I.
Oeno I.
Mangareva Is.
Gambier Is.
Tuamotu Is.
Raroia
Fakarava
Hao
Rangiroa
Tahiti
Moorea
Raiatea
Tahaa
Bora Bora
Maupiti
Tubuai
Rapa
Pitcairn
Henderson
Ducie
Oeno
Mangareva
Gambier
Marquesas
Nuku Hiva
Hiva Oa
Fatu Hiva
Ua Pou
Ua Huka
Nuku Hiva
Hiva Oa
Fatu Hiva
Ua Pou
Ua Huka

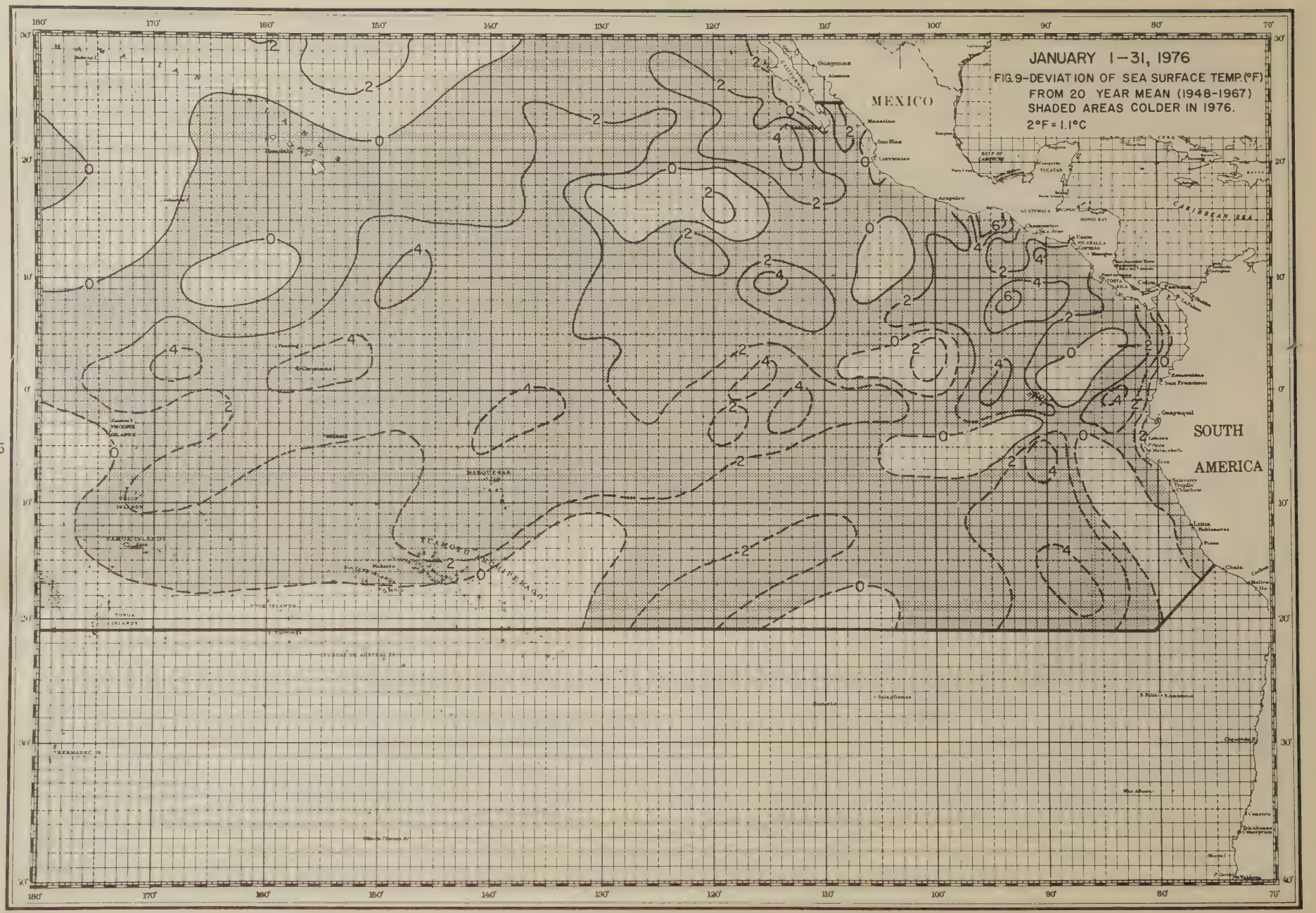
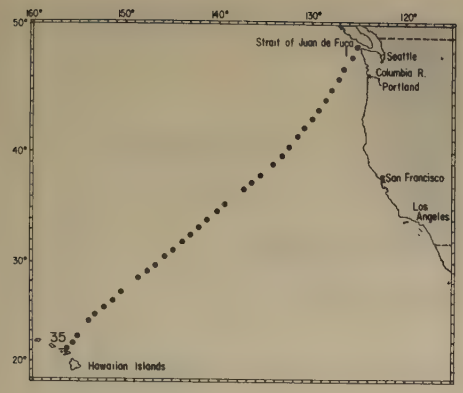
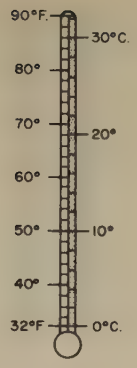

JANUARY 1–31, 1976
FIG. 9–DEVIATION OF SEA SURFACE TEMP.(°F) FROM 20 YEAR MEAN (1948–1967) SHADED AREAS COLDER IN 1976.
2°F = 1.1°C
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
COSTA RICA
PANAMA
COLOMBIA
ECUADOR
PERU
CHILE
CUBA
YUCATAN
GULF OF MEXICO
GUAYMAS
MAZATLAN
SAN BLAS
ACAPULCO
PUNTARENAS
GUAYAQUIL
SAN FRANCISCO
LIMA
CHALA
MARQUESAS
TUAMOTU ARCHIPELAGO
SOCIETY IS.
COOK ISLANDS
TONGA ISLANDS
TUBUAI OR AUSTRAL IS.
KERMADEC IS.
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°
40°

FIGURE 10





HONOLULU — SEATTLE
(Makapuu Pt. — St. of Juan de Fuca)

JANUARY 4-10, 1976

CALIFORNIAN

VOYAGE 267

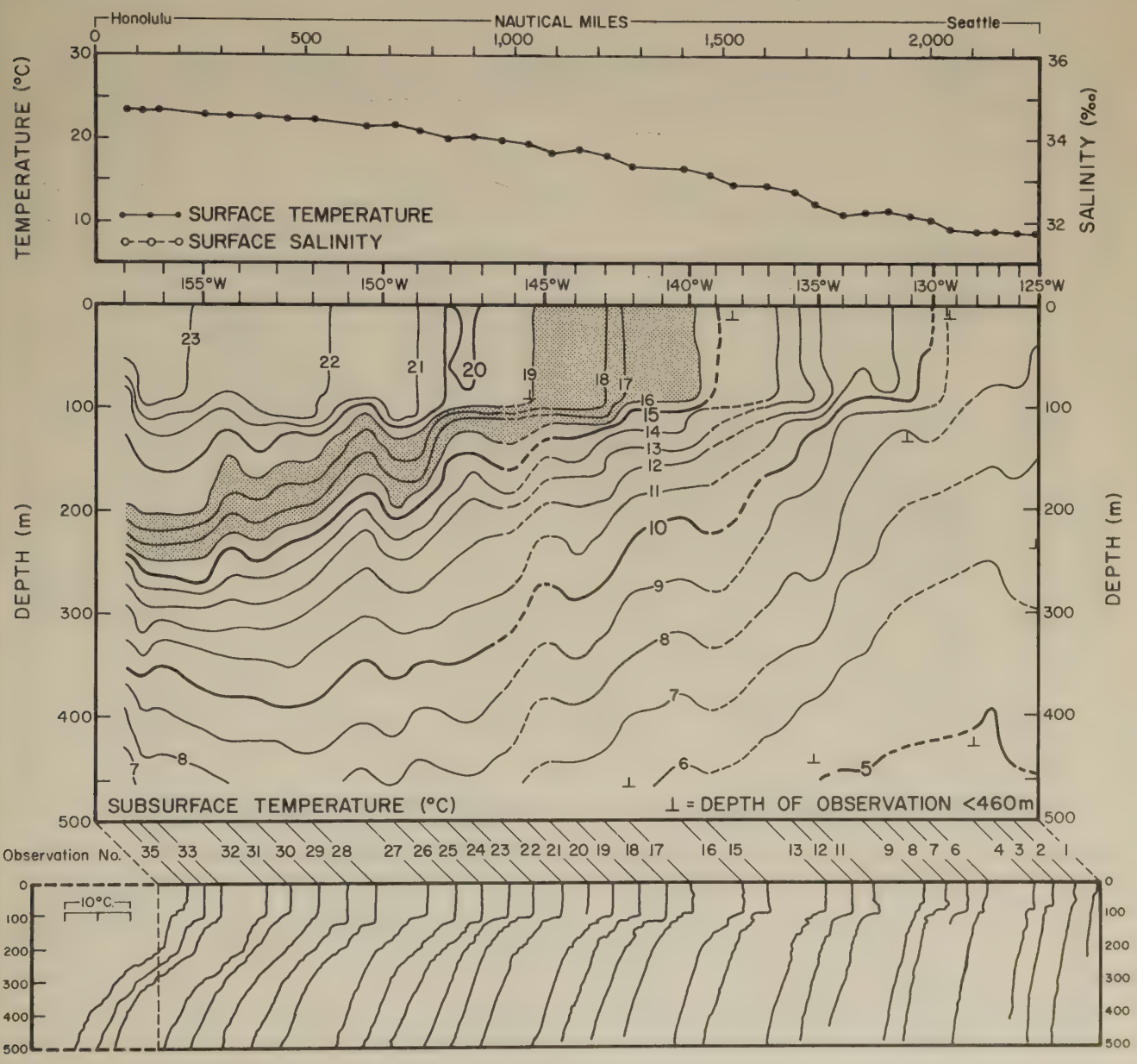
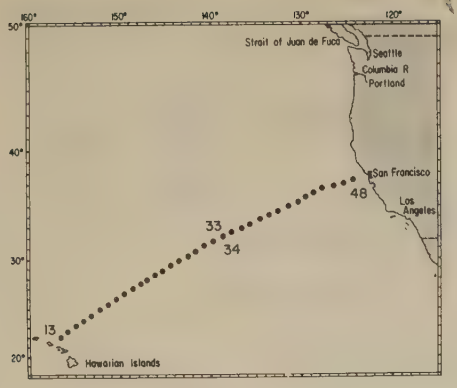
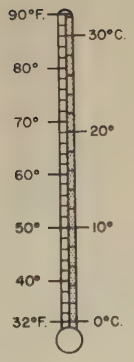


FIGURE 11





HONOLULU – SAN FRANCISCO

JANUARY 14 – 20, 1976

HAWAIIAN QUEEN

VOYAGE 173

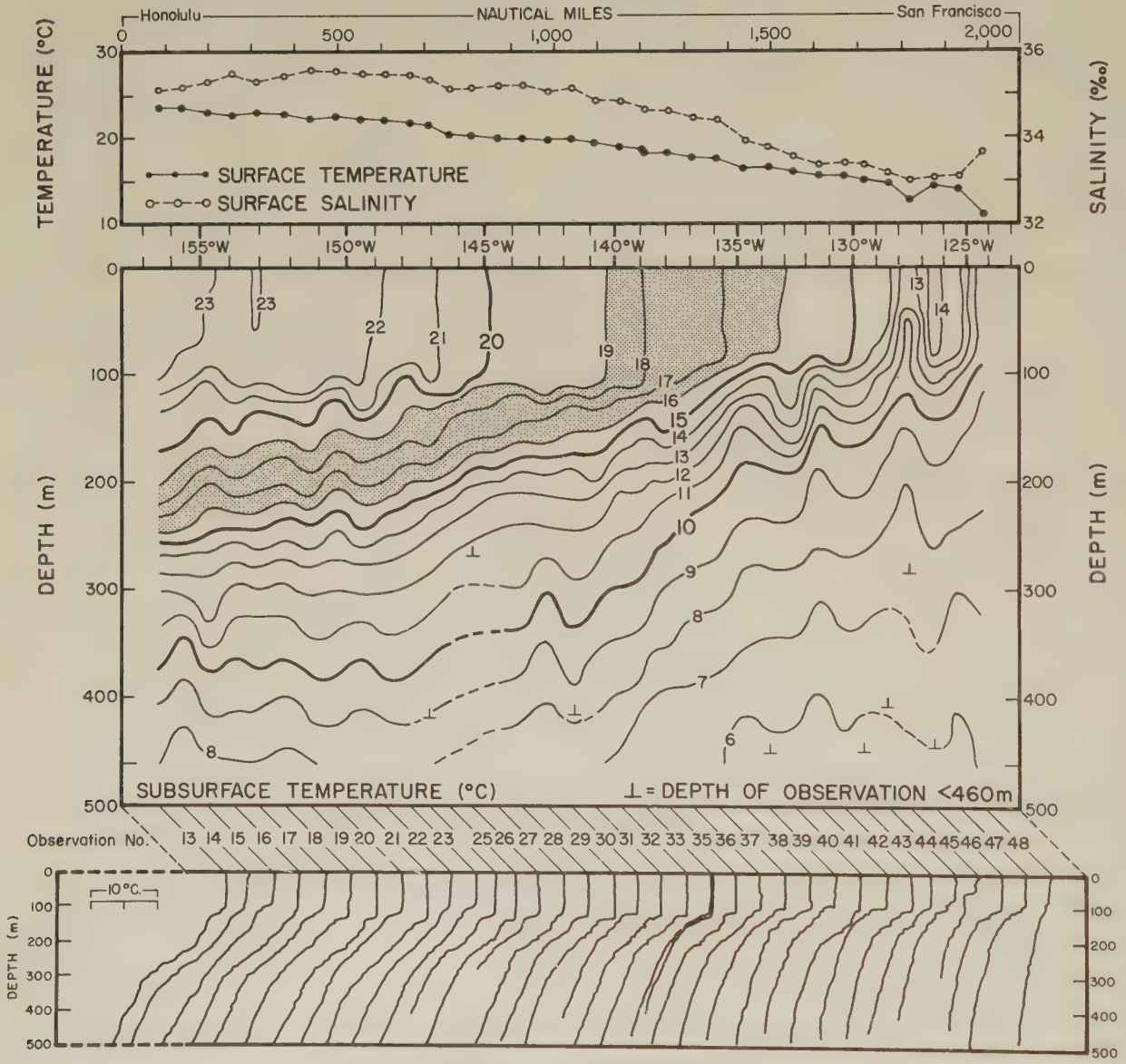
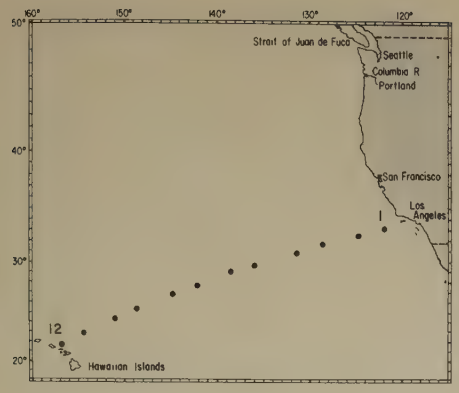
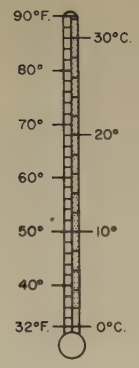


FIGURE 12



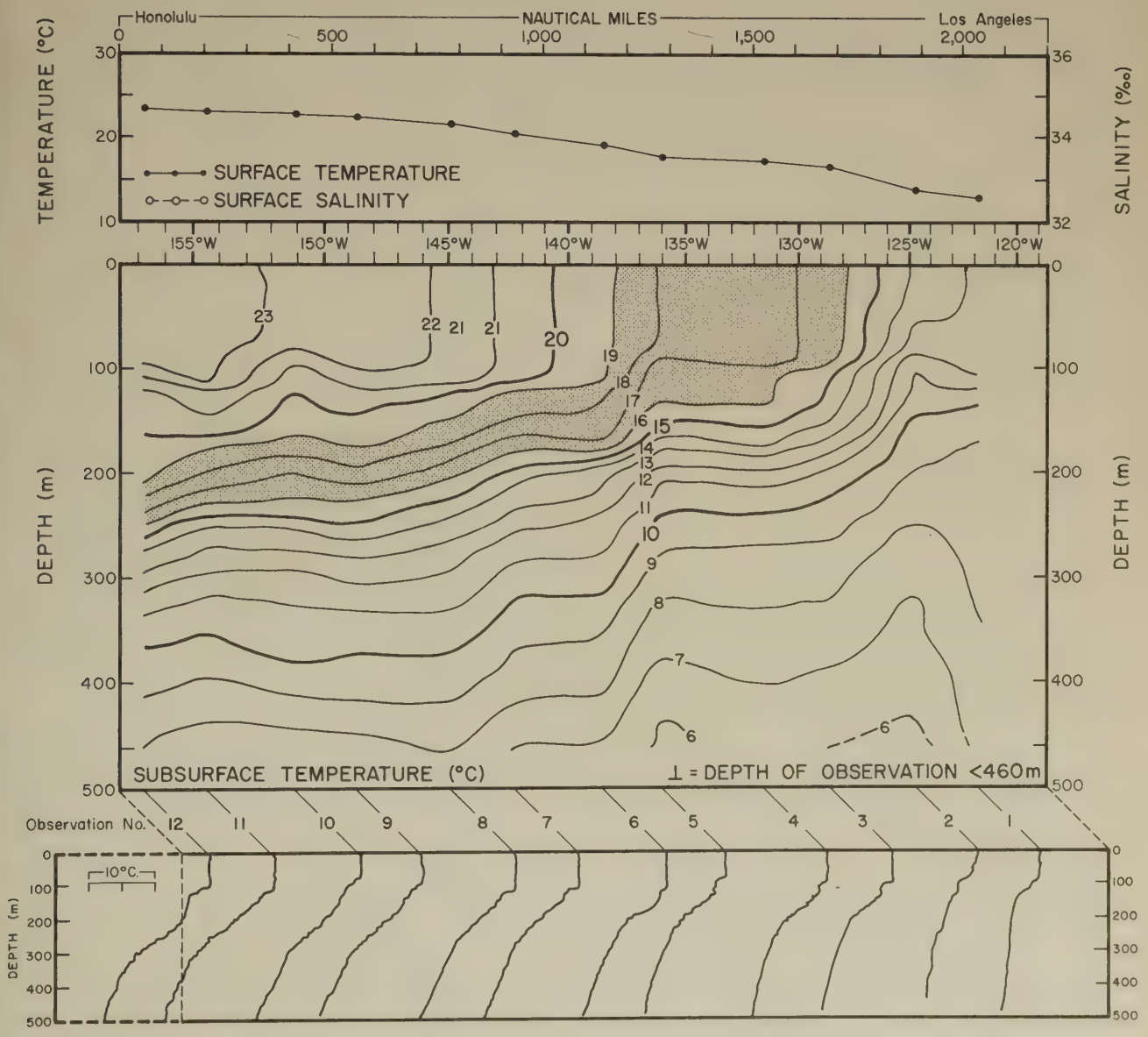


HONOLULU — LOS ANGELES

JANUARY 4 – 10, 1976

HAWAIIAN QUEEN

VOYAGE 173



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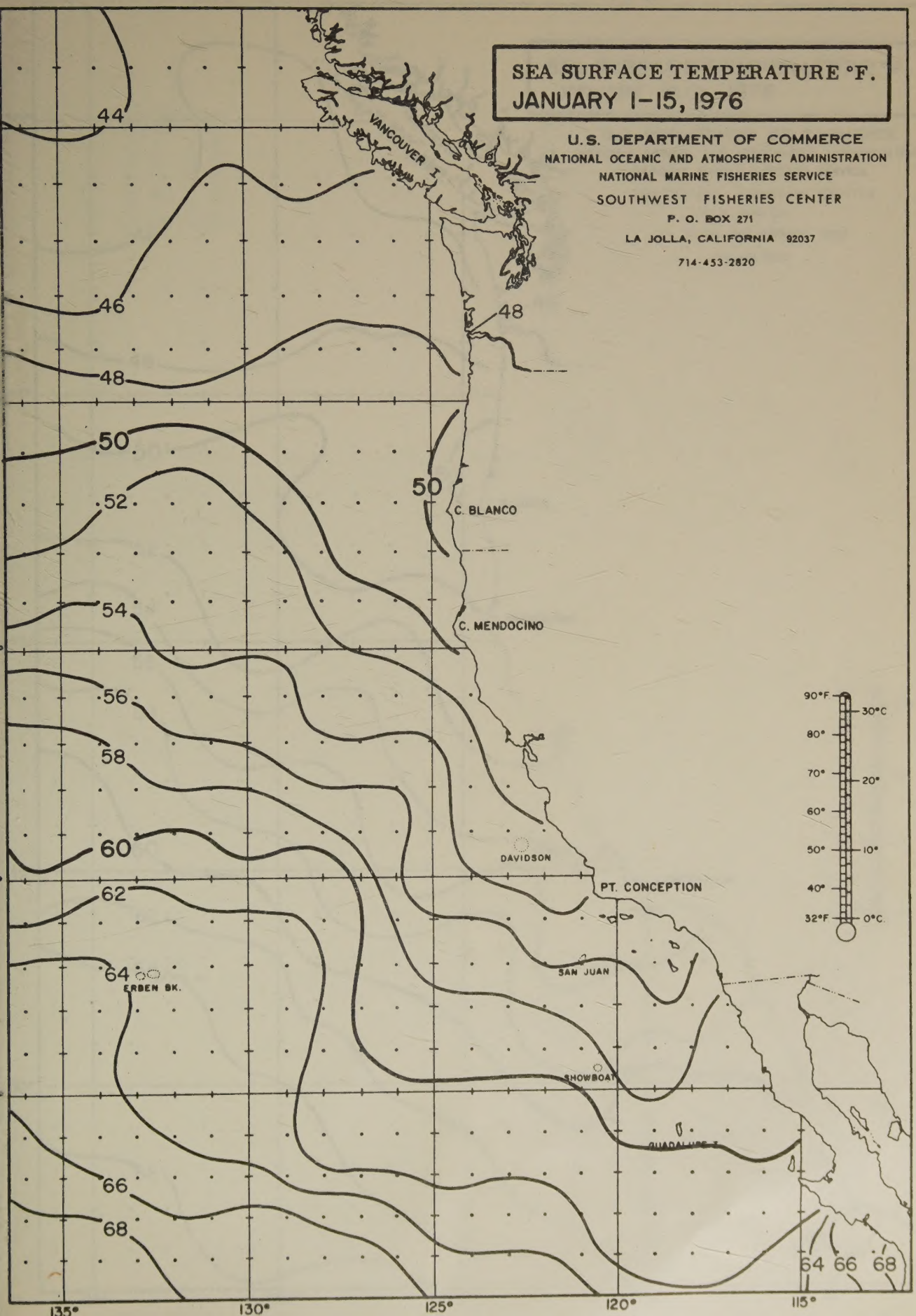

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